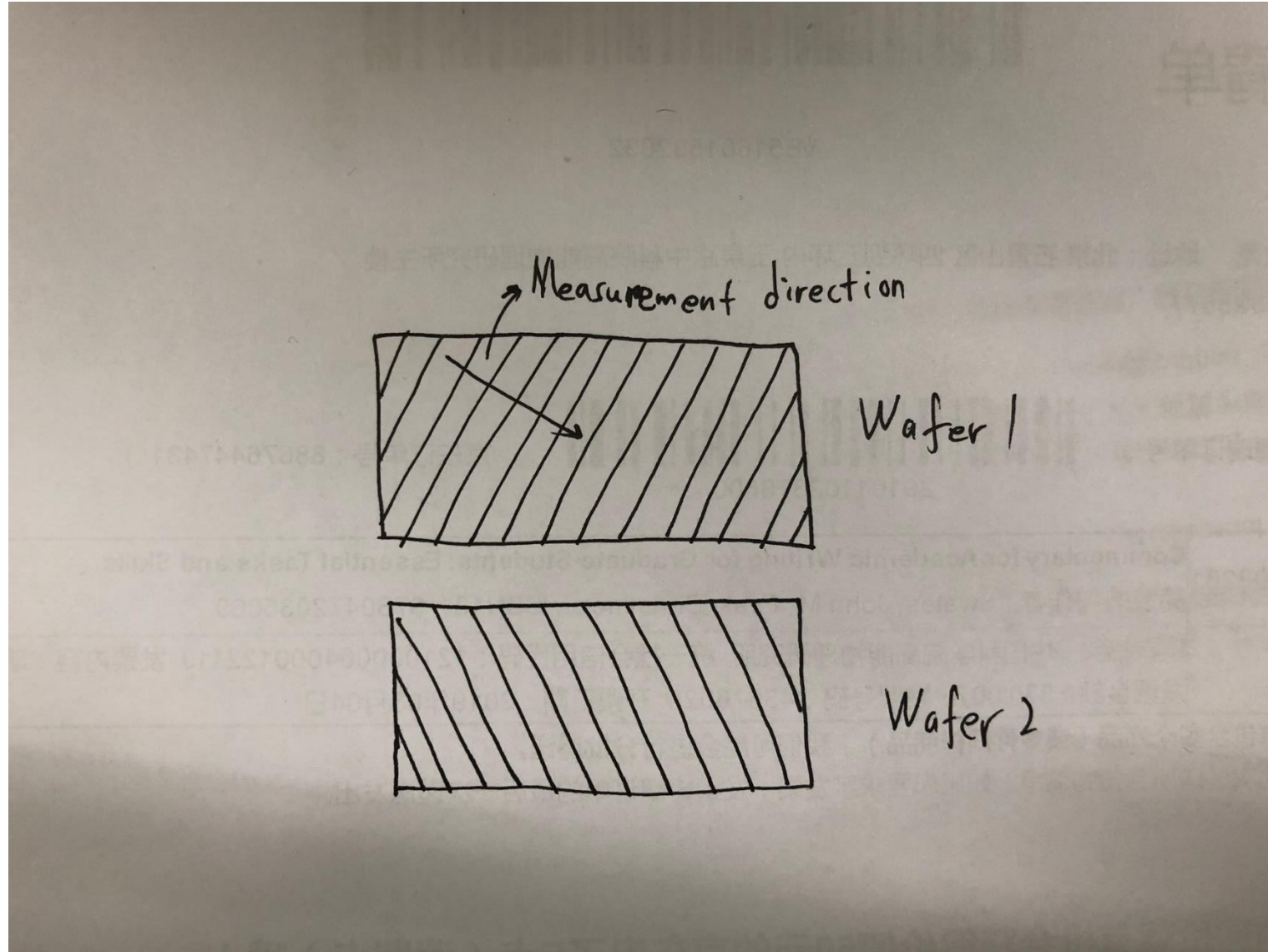


Strip Hit Correction

Zheng Taifan

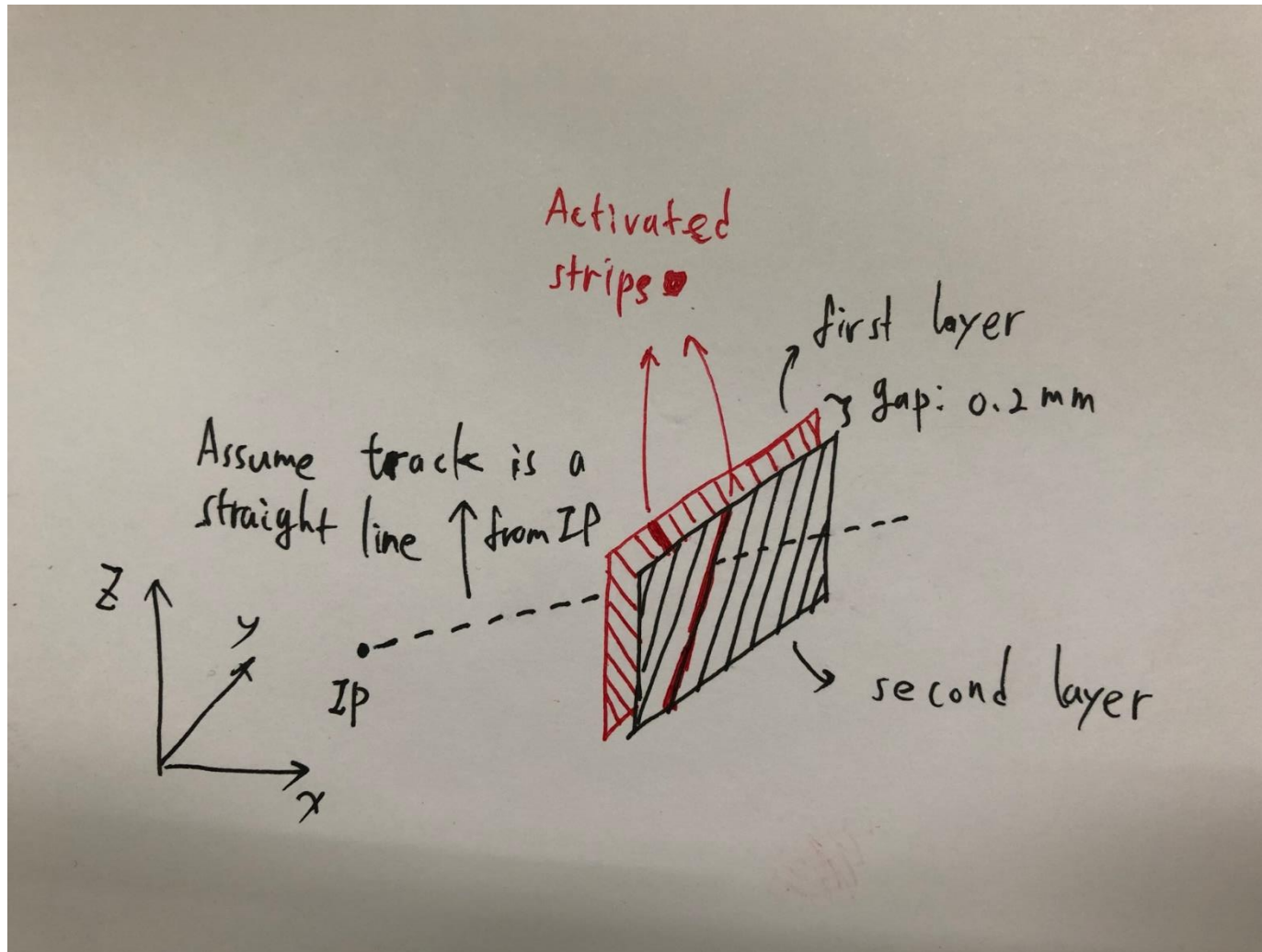
CEPC Silicon Micro Strip Detector



In the current CEPC design, two single sided silicon strips are stacked on top of each other to give two dimensional measurements.

One dimensional resolution:
 $\sigma=7\mu\text{m}$.
Distance between two layers:
0.2mm.

Strip Detector Space Point Reconstruction (Current Version)



1. Find activated strips using sim hit.
2. Assume track is a straight line coming from IP that traverses both activated stripes.
3. The space point is where the track intersects with the activated strip in the first layer.

Problem: The reconstructed space point is dependent on the incident track angle, therefore the assumption causes systematic error.

Strip Hit Correction

Solution: 1 step iteration.

1. Use the flawed space point builder and run through track reconstruction.
2. StripHitCorrection processor selects strip space points from reconstructed tracks. And the track information to work out the incident angle and rebuild space points.
3. Rerun track reconstruction.

Footnote:

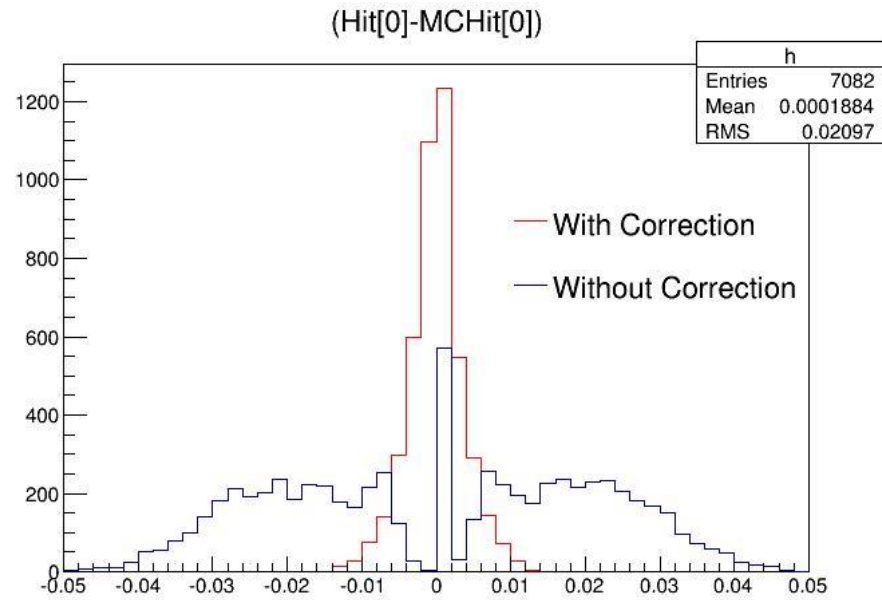
1. Strip space points that are not used in the final MarlinTrk are discarded by StripHitCorrection processor.
2. Only works for SIT and SET
3. Need to use my own version of SpacePointBuilder.

```
<processor name="VXDPlanarDigiProcessor" />
<processor name="SITPlanarDigiProcessor" />
<processor name="SITSpacePointBuilder" />
<processor name="FTDPixelPlanarDigiProcessor" />
<processor name="FTDStripPlanarDigiProcessor" />
<processor name="FTDSpacePointBuilder" />
<processor name="SETPlanarDigiProcessor" />
<processor name="SETSpacePointBuilder" />
<processor name="MyTPCDigiProcessor" />

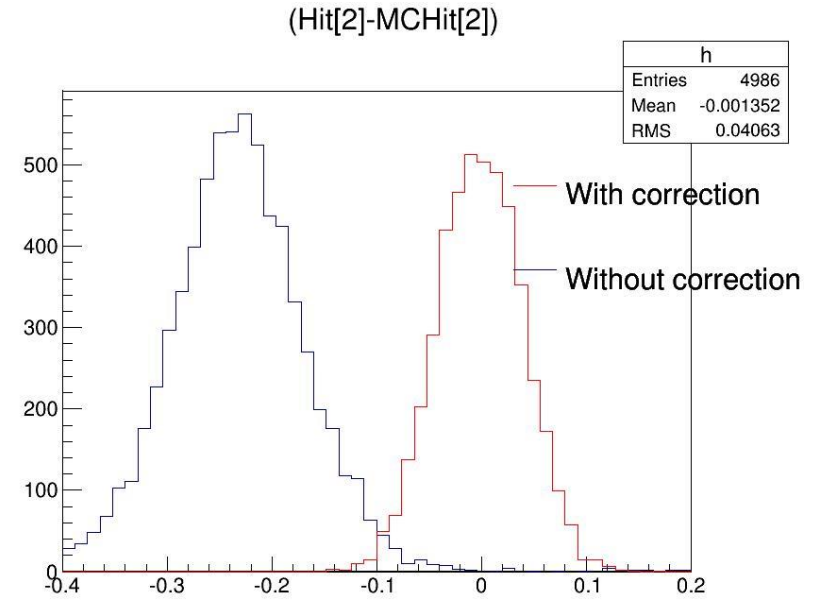
<!-- ===== the new C++ tracking ===== -->
<processor name="MySiliconTracking_MarlinTrk" />
<processor name="MyForwardTracking" />
<processor name="MyTrackSubsetProcessor" />
<processor name="MyClupatraProcessor" />
<processor name="MyFullLDCTracking_MarlinTrk" />
<processor name="MyStripHitCorrection" />

<processor name="MySiliconTracking_MarlinTrk" />
<processor name="MyForwardTracking" />
<processor name="MyTrackSubsetProcessor" />
<processor name="MyFullLDCTracking_MarlinTrk" />
```

SET Hit Reconstruction Errors in x and z Direction (3GeV muon)



X



Z